

In the Claims:

Please cancel claim 24 of record.

Please amend the following claims:

4. (Amended) A method of manufacturing a photoelectric conversion device, comprising[the steps of]:

disposing a metal containing layer in contact with a non-single crystalline silicon semiconductor layer, said metal being a catalyst that promotes crystallization of said silicon semiconductor layer;

crystallizing said silicon semiconductor layer by a heating treatment wherein said metal functions to promote the said crystallization [thereof];

forming a phosphorus doped silicon layer on said semiconductor layer after said crystallizing; and

heating said phosphorus doped silicon layer and said semiconductor layer to activate said phosphorus for gettering said catalyst metal contained in said semiconductor layer.

9. (Amended) A method of manufacturing a photoelectric conversion device, comprising[the steps of]:

disposing a metal containing layer in contact with a non-single crystalline silicon semiconductor layer, said metal being a catalyst that promotes crystallization of said silicon semiconductor layer;

crystallizing said semiconductor layer by a heating treatment wherein said metal functions to promote [the] said crystallization thereof;

introducing phosphorus ions into a surface of said semiconductor layer after said crystallizing; and [then]

subsequently heating said semiconductor layer to activate said phosphorus ions for gettering said catalyst metal contained in said semiconductor layer.

13. (Amended) A method of manufacturing a photoelectric conversion device, comprising the steps of:

disposing a metal containing layer in contact with a non-single crystalline silicon semiconductor layer, said metal being a catalyst that promotes crystallization of said silicon semiconductor layer;

crystallizing said semiconductor layer by a heating treatment wherein said metal functions to promote [the] said crystallization [thereof].

forming a phosphorus silicate glass layer on said semiconductor layer after said crystallizing; and

heating said phosphorus silicate glass layer and said semiconductor layer to activate phosphorus ions in said phosphorus silicate glass layer for gettering said catalyst metal contained in said semiconductor layer.

18. (Amended) A method of manufacturing a photoelectric conversion device, comprising[the steps of]:

forming a metal layer on a substrate, said metal being a catalyst to promote crystallization of silicon;

depositing a non-single crystalline silicon semiconductor layer on said metal layer;

crystallizing said semiconductor layer by a heating process wherein said metal functions to promote [the] crystallization of said semiconductor layer [thereof];

forming a phosphorus containing layer on or within said semiconductor layer after said crystallizing; and

heating said phosphorus containing layer and said semiconductor layer so that said phosphorus is activated to getter said metal.

Claims from
parent application
Do not enter
For review only.

21. (Amended) A solar cell comprising:

a substrate;

a first crystalline silicon film [having a substantially intrinsic] of a first conductivity type on said substrate, having a catalyst element for promoting crystallization of silicon at a concentration not higher than 5×10^{18} atoms/cm³; and

a second crystalline silicon film [having one] a second conductivity type that is different from said first conductivity type, said second crystalline silicon film being adjacent to said first crystalline silicon film[,].

ADD
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[wherein said first crystalline silicon film contains a catalyst element for promoting crystallization of silicon at a concentration not higher than 5×10^{18} atoms/cm³.]

Please add the following new claims:

26. (New) A method of manufacturing a semiconductor device, comprising:

disposing a catalyst material in contact with a surface of said non-single crystalline silicon semiconductor layer, said catalyst material including a metal;

crystallizing said non-single crystalline silicon semiconductor layer wherein said metal operates to promote said crystallization;

forming a gettering layer comprising phosphorus on or within said semiconductor layer after said crystallization; and

heating said semiconductor layer and said gettering layer to getter said metal contained in said semiconductor layer.

27. (New) A method according to claim 26, wherein said crystallizing of said non-single crystalline silicon semiconductor layer is carried out by a heating treatment.

28. (New) A method according to claim 26, wherein said metal is selected from a group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

29. (New) A method of manufacturing a semiconductor device, comprising:

disposing a catalyst material comprising a metal in contact with a non-single crystalline silicon semiconductor layer;

crystallizing said semiconductor layer wherein said metal operates to promote said crystallization thereof;

introducing phosphorus ions into a portion of said semiconductor layer after said crystallizing; and

subsequentially heating said semiconductor layer so that said metal is gettered by said phosphorus ions.

30. (New) A method according to claim 29, wherein said crystallizing of said non-single crystalline silicon semiconductor layer is carried out by a heating process.

31. (New) A method according to claim 29, wherein said metal is selected from a group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

32. (New) A method according to claim 29, further comprising a step of removing said portion of said semiconductor layer by an etching process after said heating of said semiconductor layer.